

CHAPTER 7

AFLOAT SAFETY

Ships and submarines present unique hazards not found at shore industrial activities. As discussed in chapter 1, Department of Defense (DOD) safety directives allow for the adjustment of Occupational Safety and Health Administration (OSHA) safety standards for military systems and equipment. We must attain the highest possible safety standards within these limitations. As we have a separate safety program for shore activities and aviation, we address afloat safety standards in its own directive, OPNAVINST 5100.19B, *Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat*. Another instruction (OPNAVINST 5100.21B, *Afloat Mishap Investigation and Reporting*) includes additional requirements for shipboard safety.

The Afloat Safety Program applies to all DOD military and on-duty civilian personnel assigned to or embarked in a U.S. Navy vessel. The program also covers U.S. Naval Reserve and Military Sealift Command (MSC) vessels manned by military personnel and civil service employees. Because of the manning complexities of MSC ships, a command may tailor some administrative procedures for MSC ship application. However, the procedures must provide protection equal to, or better than, those contained in OPNAVINST 5100.19B.

In this chapter, we will address the following topics:

- Afloat Safety Program background and goals
- Afloat Safety Program elements
- Afloat Safety Program organization
- Shipboard safety organization
- Afloat safety training
- Afloat Safety Program evaluation
- Surface ship safety standards
- Afloat mishap reporting

AFLOAT SAFETY PROGRAM GOALS

Attaining the highest degree of operational readiness and mission accomplishment is the primary goal of the Afloat Safety Program. We achieve this goal

by eliminating or controlling hazards. By achieving this goal, we reduce injuries, deaths, and material damage.

Another goal of the program is to setup and maintain a fleetwide atmosphere of safety consciousness. This awareness must be foremost in every evolution of the program. To achieve the Afloat Safety Program goals, we must strive for constant improvement through positive leadership. We need personnel at all levels to take part in the Afloat Safety Program. We also need the support of those who oversee the program in helping to ensure compliance. You can easily see how your role as a supervisor fits into this program.

The critical, first step in achieving the Afloat Safety Program goals is hazard identification. Hazard identification requires all levels of the chain of command to practice safety awareness by continuously watching for hazards. Preventing mishaps depends on the elimination, control, and correction of hazards. We discussed hazard abatement in chapter 3.

Remember, you cannot eliminate some hazards. In such cases, you can reduce the risk through engineering controls, administrative controls, and personal protective devices. OPNAVINST 5100.19B, *Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat*, introduces specific requirements on hazard awareness, identification, reporting, and correction. All commands should take the following actions:

- Report unsafe or unhealthful conditions, without fear of reprisal
- Take positive action on all reports of unsafe conditions
- Correct unsafe conditions based on the severity of the hazard
- Investigate and report mishaps and near mishaps and rapidly issue lessons learned to prevent recurrence

AFLOAT SAFETY PROGRAM ELEMENTS

The Afloat Safety Program encompasses a variety of operational safety, general safety, and health program

elements. Various directives contain safety guidance and standards. Commanding officers will use them to set up their shipboard safety program. For a list of references providing detailed safety program guidance, refer to enclosure (11) of OPNAVINST 5100.21B, *Afloat Mishap Investigation and Reporting*. This enclosure refers you to other directives for safety standards to prevent you from studying duplicate and conflicting information.

You can find most of the shipboard safety standards in the NAVOSH *Program Manual for Forces Afloat*, OPNAVINST 5100.19B. Volume I contains detailed program administration requirements. Volume II provides safety standards for surface ships, and volume III provides submarine safety standards. Volumes II and III replace the superseded instruction, *Safety Precautions for Forces Afloat*.

The following publications also contain safety precautions:

- *Naval Ships' Technical Manuals (NSTMs)*
- *General Specifications for Ships of the United States Navy (GENSPECS)*
- *General Specifications for Overhaul of Surface Ships (GSO)*
- Naval Sea Systems Command instructions
- Bureau of Medicine and Surgery instructions
- Ordnance publications (OPs)
- Fleet and type commander directives

AFLOAT SAFETY PROGRAM ORGANIZATION

Primary responsibility for directing the Afloat Safety Program rests with the chain of command. The chain of command includes commanding officers, executive officers, department heads, division officers, division leading petty officers, and work center supervisors. It also includes the individual sailor or MSC civilian worker. Chapter 1 discussed a typical ship safety organization. The safety organization provides a means to introduce the program and set it in motion.

All levels in the chain of command have some specific safety duties and responsibilities. You should consult the following instructions for further information on specific duties and responsibilities:

- *Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat*, OPNAVINST 5100.19B
- *Standard Organization and Regulations of the U.S. Navy*, OPNAVINST 3120.32C
- *Afloat Mishap Investigation and Reporting*, OPNAVINST 5100.21B
- *U.S. Navy Regulations, 1990*

CHIEF OF NAVAL OPERATIONS

The Chief of Naval Operations (CNO) is responsible for executing and managing the Afloat Safety Program. The CNO ensures safety training is provided to all U. S. Navy afloat commanding officers, executive officers, department heads, and primary and collateral duty ship's safety officers. In addition, the primary duty safety officers assigned to readiness group and squadron staffs also receive safety training.

SYSTEMS COMMANDERS

Systems commanders (COMNAVSEASYSKOM, COMNAVAIRSYSKOM, COMSPAWARSYSKOM, and COMNAVSUPSYSKOM) provide technical focus for comprehensive development, assessment, and administration of surface ship, air, and submarine safety programs. When requested, they help mishap investigation boards in the investigative process. Systems commanders respond to the recommendations and corrective actions developed by the type commanders. They also issue proper documentation to correct hazardous conditions. Finally, COMNAVSEASYSKOM maintains membership in the Safe Engineering and Operations Program (SEAOPS) for the landing craft, air cushion (LCAC) review committee.

CHIEF OF NAVAL EDUCATION AND TRAINING (CNET)

Chief of Naval Education and Training (CNET) is responsible for ensuring that subordinate commands provide effective safety training at all levels in the chain of command. CNET also ensures that safety awareness is an extensive and integral part of every U.S. Navy training course.

COMMANDER, NAVAL SAFETY CENTER

Commander, Naval Safety Center (COMNAV-SAFECEN), supports the Assistant/Deputy Chief of

Naval Operations (N4, N87, N86, and N88) and the systems commanders in effecting, maintaining, and improving the Afloat Safety Program. COMNAVSAFECEN recommends revisions to OPNAVINST 5100.19B about safety standards for forces afloat and periodically reviews and revises OPNAVINST 5100.21B. Naval Safety Center personnel, also act as technical consultants for all afloat safety training. At least annually, COMNAVSAFECEN reports on the Afloat Safety Program compliance to the assistant Chiefs of Naval Operations. These reports are based on the analysis of data collected during safety surveys.

COMNAVSAFECEN provides an advisor to mishap investigation boards for Class A mishaps. The commander coordinates, with the type commander (TYCOM), recommendations for investigation of other than Class A mishaps that may warrant a mishap investigation board. When agreed upon with the type commander, COMNAVSAFECEN also provides an advisor for mishap investigation boards for other than Class A mishaps.

COMNAVSAFECEN determines, when appropriate and if requested, the privileged or nonprivileged status of all mishap investigation board evidence. COMNAVSAFECEN conducts the final review and analysis of mishap investigation reports (MIRs). He or she endorses MIRs and provides a copy to all endorsers. The Naval Safety Center retains, as the custodian, MIRs and the endorsements for at least 5 years. COMNAVSAFECEN checks the completion of corrective action resulting from an MIR.

Sanitizing MIRs and endorsements for use in safety training upon request is another COMNAVSAFECEN responsibility. Sanitizing includes removing all identifiable data that could connect the report to an individual, organization, or particular mishap. COMNAVSAFECEN promptly distributes essential information, such as lessons learned, to cognizant commands. The Naval Safety Center also maintains a centralized historical safety data repository.

TYPE COMMANDERS

Submarine, surface, air, Naval Reserve, and MSC TYCOMs ensure subordinate afloat commands set in motion and maintain the Afloat Safety Program. Through group and squadron commanders, TYCOMs foster a positive atmosphere that encourages and demands continuous attention to hazard identification, mishap prevention, and proper reporting.

TYCOMs ensure the correction of documented hazards receives priority during availability planning. Additionally, they make sure subordinate units conduct timely and complete shipboard safety mishap investigations. A TYCOM directs the formal investigation of any Class B mishap. Additionally, a TYCOM directs a mishap investigation board in the investigation of other mishaps if the investigation may reveal vital safety information.

TYCOMs will provide and maintain the overall Quality Assurance (QA) Program as an integral part of mishap prevention. In maintaining the QA Program, they must strive to eliminate the hazards in dangerous shipboard systems. TYCOMs coordinate with the COMNAVSAFECEN, COMNAVSEASYSKOM, and other technical agencies in providing aid to the mishap board, when requested.

GROUP AND SQUADRON COMMANDERS

Group and squadron commanders ensure subordinate commands execute and maintain the Afloat Safety Program according to the policy and philosophy of OPNAVINST 5100.19B. They must include elements of this program in command inspections, including evaluation of the QA process in maintaining shipboard systems. They also help units identify hazards beyond their capability to correct in the availability work package. The units should then schedule the correction of these hazards.

Additionally, group and squadron commanders ensure subordinate commands include mishap prevention, investigation, and reporting in their group and squadron training requirements. The TYCOM directs this training. Finally, group and squadron commanders make sure commanding officers are informed of hazardous conditions and of specific hazards identified by a mishap investigation.

GROUP OR SQUADRON SAFETY OFFICER

The group or squadron safety officer acts as the principal advisor to the commander for the Afloat Safety Program. Group and squadron safety officers were first assigned as a primary duty in 1991. These full-time safety officers provide continuity in the chain of command for safety matters from the ships to the TYCOM.

The group or squadron safety officer maintains appropriate safety records and mishap statistics. He or she then makes this information available to a mishap board upon request. The group or squadron safety

officer aids subordinate commands in conducting safety mishap investigations for all other reportable and special case mishaps. Assuring distribution of safety information and lessons learned resulting from mishap investigations is an additional responsibility of the group or squadron safety officer.

The group or squadron safety officer schedules and coordinates mishap prevention and hazard awareness training with the group or squadron training officer. The safety officer helps subordinate commands in rating their compliance with suitable instructions and in rating the effectiveness of their safety and QA programs. The group or squadron safety officer also coordinates with the staff material officer to ensure that the Current Ship's Maintenance Projects (CSMPs) identify hazards beyond ships' force capability to correct.

SHIPBOARD SAFETY ORGANIZATION

Chapter 1 discusses the shipboard safety organization in detail. OPNAVINST 5100.21B outlines some of the specific duties of the shipboard safety organization dealing primarily with mishap investigation and reporting.

COMMANDING OFFICERS, MASTERS, AND CRAFTMASTERS

Commanding officers, masters, and craftmasters must conduct an aggressive, positive Afloat Safety Program based on OPNAVINSTs 5100.19B and 5100.21B. They ensure all mishaps are investigated and assist mishap investigation boards in their investigations. The safety officer acts as the principal advisor to the commanding officer for the Afloat Safety Program.

AFLOAT SAFETY OFFICERS

The afloat safety officer reports directly to the commanding officer in matters about hazardous or unsafe conditions or operations. The safety officer reports through the executive officer for matters on program administration, program deficiencies, and corrective action status. The safety officer helps the commanding officer conduct mishap investigations for all reportable mishaps not investigated by mishap investigation boards.

In case of a mishap, the safety officer aids the commanding officer in the following responsibilities:

- Making an accurate plot of the scene

- Taking photographs or making videotapes of the wreckage, its distribution, and the surrounding area
- Diagraming any underwater damage
- Submitting the appropriate report (fig. 7-1)

DEPARTMENT HEADS, DIVISION OFFICERS, AND WORK CENTER SUPERVISORS

Department heads, division officers, and work center supervisors include information on mishap prevention and investigations in general military training (GMT). They must emphasize the positive, all-hands approach to safety awareness and hazard identification. They must report hazards as outlined by OPNAVINST 5100.19B. They also must inspect all work and make sure all repair actions under their responsibility conform with QA procedures.

ALL HANDS

All hands must know and obey all safety precautions and standards. They must report suspected unsafe or unhealthful work procedures or conditions to their immediate supervisor. In addition, personnel must report any injuries, occupational illnesses, or property damage resulting from a mishap to their supervisors. Finally, they should help all safety investigators by voluntarily providing mishap information.

AFLOAT SAFETY TRAINING

The key to a successful safety program is quality training. CNET provides safety training at all levels in the chain of command. The *Navy Occupational Safety and Health (NAVOSH)/Hazardous Material Control and Management (HMC&M) Navy Training Plan*, NTP S-40-8603, requires that all U.S. Navy courses, from recruit through commanding officer training, include safety topics. The plan also requires the periodic review and revision of safety courses to ensure they reflect current safety standards.

SHIPBOARD SAFETY TRAINING

Building and expanding upon NAVOSH formal training requires an effective, onboard training effort. The safety officer and the organization of division safety petty officers provide a cadre to execute onboard training. All shipboard personnel will receive Afloat

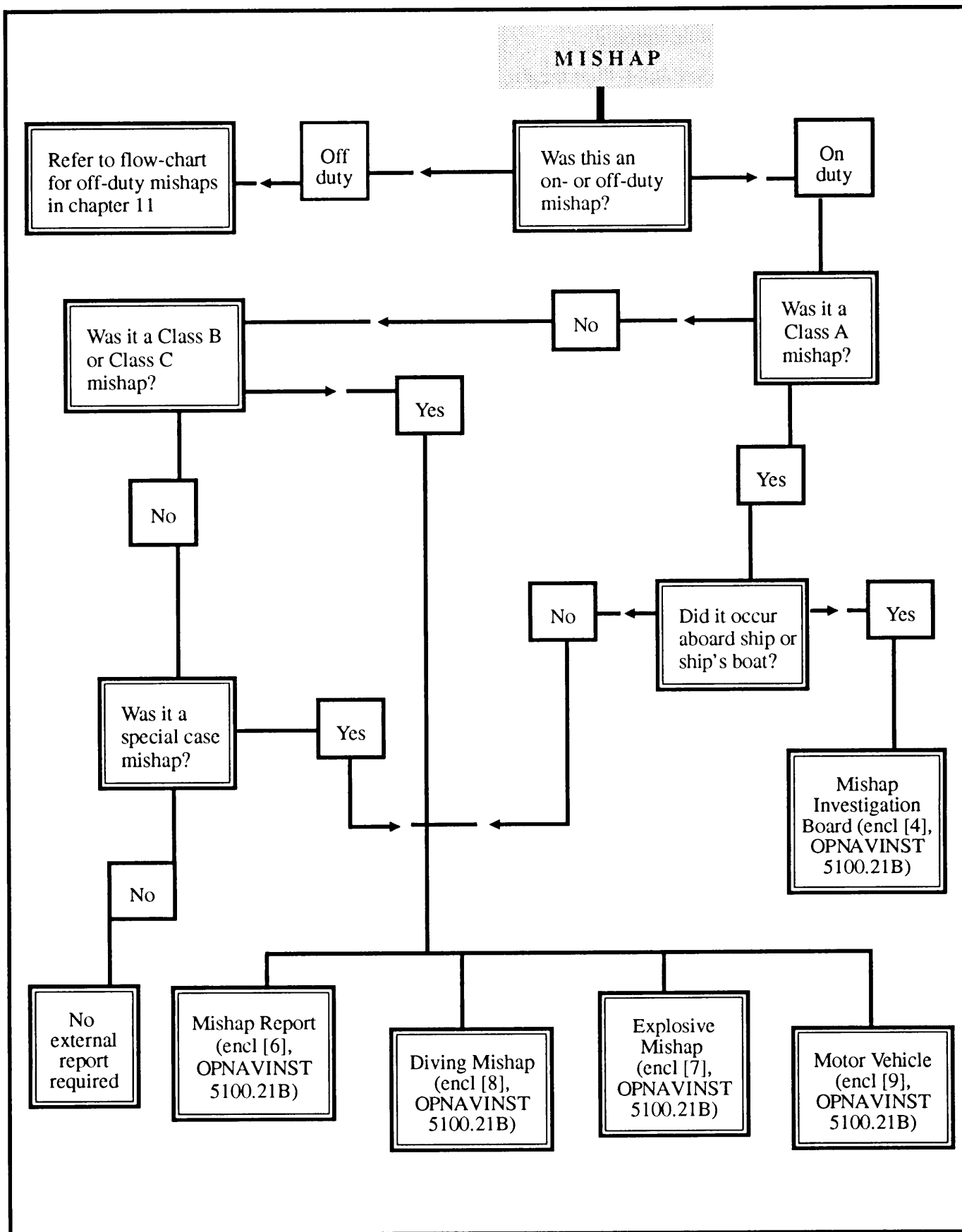


Figure 7-1.—Afloat mishap pathfinder.

Safety Program indoctrination and annual refresher training that includes the following topics:

- An introduction to the Afloat Safety program, the identity of key safety personnel, and the identity of safety chain of command personnel
- Detailed information on mishap prevention, investigation, and reporting with emphasis on privileged information
- Safety precautions and safety standards
- Hazard identification and reporting procedures

You may wish to use the *NAVOSH Training Guide for Forces Afloat*, NAVEDTRA 10074, in conducting the shipboard training required by OPNAVINST 5100.19B. The training guide combines occupational health and safety subject matter into 20 generic lesson guides, complete with quizzes and handouts. It also provides lists of available training aids, video tapes, and formal course information. It supplies a sample long-range training plan, references, and a technical assistance guide.

Instructors for the afloat training guides should be E-5 or above, preferably safety petty officers or medical department representatives. The instructor does not have to be a subject matter expert. Make afloat safety and occupational health training apart of your command training plan. Include it as GMT in the long-range training plan for your ship.

FORMAL TRAINING FOR SHIPBOARD SAFETY AND HEALTH PROGRAMS

In addition to shipboard training, several shore courses are offered for shipboard personnel. Fleet training centers, the Naval Safety Center, the Naval Safety School, and Navy Environmental and Preventive Medicine Units (NEPMUs) conduct the training. The NAVOSH training incorporated into these courses reinforces basic and specialty training. This training provides direct support toward the management of hazard-specific programs associated with the NAVOSH Program. Formal NAVOSH training provides personnel with information on how to detect hazards, perform surveillance, report deficiencies, report mishaps, conduct training, and achieve program elements. The *NAVOSH Training Guide for Forces Afloat*, NAVEDTRA 10074, lists these courses.

Formal safety training was upgraded in 1991 in response to a tasking from the Chief of Naval Operations for an improved Afloat Safety Program. The Naval

Safety Center developed two new safety officer courses and helped to revise the safety supervisor course. The following formal training is provided for the surface ship and submarine safety organization:

AFLOAT SAFETY OFFICER COURSE

(A-4J-0020)—This 10-day course trains commissioned officers, warrant officers, and Military Sealift Command first officers who have been or will be assigned as a command's safety officer. The course concentrates on preparing primary and collateral duty safety officers to manage the program aboard their commands. The Surface Warfare Officer School staff in Newport, Rhode Island, presents the course, which they export to major fleet home ports.

The course uses OPNAVINST 5100.19B to provide instruction on hazard identification (inspections and industrial hygiene surveys), medical surveillance, and hazard abatement. It also covers program evaluation, training, safety standards and regulations, and the Safety Council and Enlisted Safety Committee. It also addresses the major hazard-specific and support programs and the detailed instruction on mishap investigation and reporting. This course is required for staff and shipboard primary and collateral duty safety officers.

SUBMARINE SAFETY OFFICER COURSE

(F-4J-0020)—This 4-day course is a condensed version of the 10-day Afloat Safety Officer course. It is tailored exclusively for submarine, collateral-duty safety officers. The submarine training facilities at Norfolk, Virginia, and Pearl Harbor, Hawaii, present the course. This course provides the same topics as the afloat course but drops the surface-ship-unique topics. All collateral duty submarine safety officers should complete either this course or the Afloat Safety Officer course.

SAFETY PROGRAMS AFLOAT COURSE

(J-493-2099)—This 5-day course, presented at fleet training centers, provides specialized NAVOSH training to senior enlisted personnel. Anyone who takes the course must be an E-5 or above who has been, or will be, assigned to duty as a division safety petty officer or safety supervisor. One-half of the division safety petty officers from each ship will attend this course before, or within 6 months of, their assignment. Training covers information on workplace monitoring, hazard identification, hazard abatement, and deficiency correction. In addition, personnel receive training on rating the division safety program, safety standards and regulations, mishap or near-mishap investigations, and division safety training.

Division safety petty officers also receive training on the enlisted safety committee, using and caring for personal protective equipment, and advising the division officer on safety matters. This course helps the student develop and maintain an effective division safety program.

AFLOAT SAFETY PROGRAM EVALUATION

The principle way commands discover hazards is through workplace inspections. The command's supervisors direct the workplace inspections. They arrange for appropriate safety and health personnel to evaluate ship's spaces and equipment. They also routinely observe operations at the jobsite. Onsite observations enable supervisors to detect and correct hazards resulting from noncompliance with the safety standards contained in OPNAVINST 5100.19B, volumes II and III.

Commands use industrial hygiene surveys as another method of identifying and evaluating workplace hazards. Professional industrial hygienists conduct these surveys to evaluate each workplace for occupational hazards and physical stressors. This survey identifies medical surveillance requirements. The examinations detect adverse health effects resulting from health hazardous exposure associated with duties.

ANNUAL WORKPLACE SAFETY INSPECTIONS

Every workspace on board ship should be inspected for safety hazards at least once a year. The safety officer will ensure this inspection is conducted. An experienced officer, accompanied by a division safety petty officer (or aboard submarines, a submarine-qualified senior petty officer from the division), is assigned to accomplish the safety inspection of a workplace.

Appendix A3-A of OPNAVINST 5100.19B provides inspection guidance in the form of checklists. Safety inspections of all workspaces/equipment need not be conducted at one time. During regularly scheduled zone inspections, you can designate certain spaces to receive "safety" zone inspections. These zone inspections will make up the safety inspection. The completed Workplace Inspection Form with an accompanying deficiency list, such as a Zone Inspection Deficiency List (ZIDL), is returned to the safety officer upon completion of the inspection. That allows the hazards to be documented and followed for corrective action.

INDUSTRIAL HYGIENE SURVEYS

This survey quantifies hazardous exposures associated with health-hazardous operations based on actual measurements. We discussed industrial hygiene services in chapter 5. The industrial hygiene survey provides the following information:

- Summary of NAVOSH Program compliance
- List of asbestos hazards
- List of eye hazardous areas
- Respiratory protection requirements
- Lead hazard areas or processes
- Medical surveillance requirements
- Other data from measurements and air sampling

Industrial hygiene surveys are conducted between the completion of each yard period and before deployment. These surveys will normally be accomplished by a Navy Environmental and Preventive Medicine Unit (NEPMU) or a tender or aircraft carrier industrial hygiene officer. The safety officer should keep a copy of the survey report and follow up on corrective actions.

JOBSITE OBSERVATION

It is amazing how many people can walk right by a hazard and not notice it! Every supervisor, of every rank, has an obligation to be on the lookout for hazards. Most hazards are identified through jobsite observation.

The commanding officer, executive officer, safety officer, department heads, division officers, and work center supervisors should routinely walk through workspaces during the workday or during evolutions to observe jobsite performance. They should make these observations to detect and correct hazards resulting from worker noncompliance with safety standards.

Supervisors should correct those hazards that can be corrected—on the spot—and document all others. They may need to take temporary measures to prevent a mishap until a permanent correction is made.

MASTER-AT-ARMS FORCE INSPECTIONS

Members of the master-at-arms (MAA) force act as roving safety inspectors during their normal tours of the command. They must be alert to any deficiencies or hazards that could result in injury to personnel or

damage to equipment. They assist the safety officer in keeping the NAVOSH Program visible to all hands. They attempt to have any observed deficiency or hazard corrected “on the spot.” If that is not possible, they will report the deficiency to the safety officer or their supervisor. Although submarines do not have an MAA force, roving watch standers can still be on the lookout for hazards.

NAVSAFECEN SAFETY SURVEYS

Ships should request a Shipboard Safety Survey from the Naval Safety Center once every 3 years (2 years for submarines). The NAVSAFECEN conducts the Shipboard Safety Survey, which takes 1 or 2 days. During the survey, NAVSAFECEN looks at representative operations throughout the ship. It identifies safety hazards, trains safety officers and safety petty officers, and provides the commanding officer with an evaluation of the safety status of the command. Since the intent of the survey is to promote hazard awareness, the survey report is made only to the ship. No grade or relative standing is assigned, and follow-up reports are not required.

FORMAL SAFETY INSPECTIONS

Many formal inspections conducted afloat and ashore review safety procedures and conditions. The Board of Inspection and Survey (INSURV), under the administration of the CNO, conducts a material inspection of ships. This inspection, taking 3 to 5 days (part of which is under way), takes place 4 to 6 months before a regular overhaul, or about every 3 years. INSURV also inspects ships before their de-commissioning and inspects (through sea trials, acceptance trials, or final contract trials) newly constructed ships. One area the Board inspects is NAVOSH. This area of the inspection includes a thorough examination of the ship’s programs, training, administration, and material condition. The following are examples of other formal inspections conducted aboard ships, which cover elements of the NAVOSH Program:

- Operational propulsion plant examination (OPPE)
- Light-off examination (LOE)
- Logistics management assessment (LMA)
- Medical readiness inspection (MRI)

- Command inspection by the immediate superior in command (ISIC) or type commander (TYCOM)
- Various weapons and radiological controls inspections
- Intermediate maintenance activity (IMA) audit/maintenance material inspection (MMI) (tenders only)

Preparation for any of these formal inspections is extensive and time consuming, especially if you don’t keep the programs up to date. A routine self-inspection and survey program can help you stay ahead of hazard correction and keep your command ready for inspection. Volume I of OPNAVINST 5100.19B provides checklists at the end of every chapter. These checklists help you evaluate your program and determine your course of action for inspection preparations.

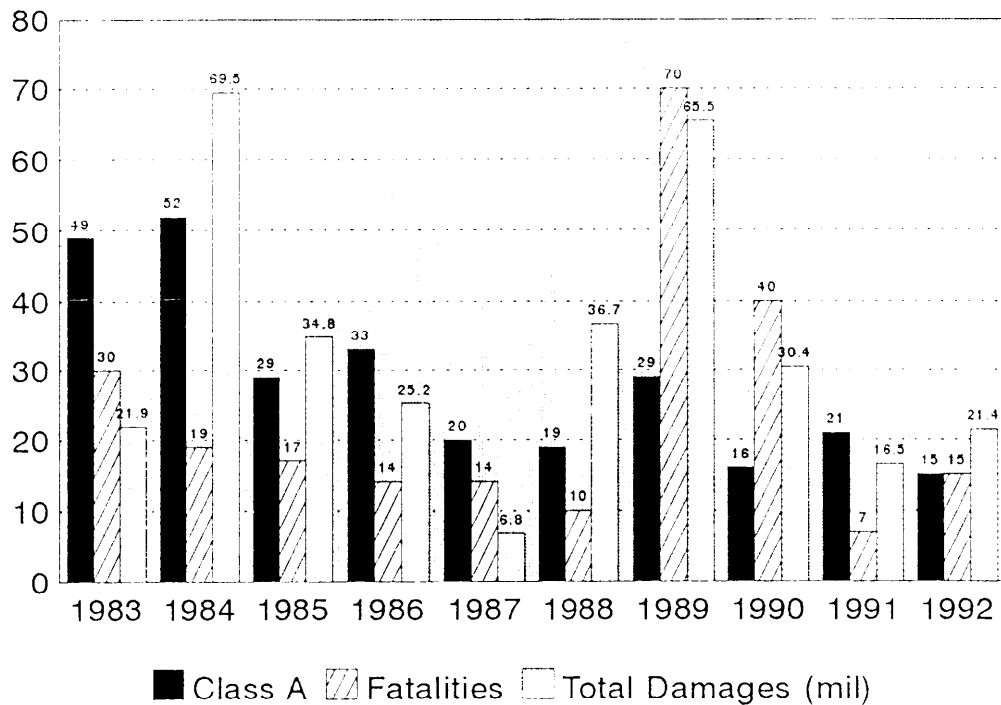
SURFACE SHIP SAFETY STANDARDS

As stated earlier, shipboard life is one of the most hazardous working and living environments in existence. The existence of hazardous materials and equipment contributes to the creation of a mishap-prone environment. A ship is a constantly moving platform subject to conditions such as weather, collision, and grounding. These conditions help to create a mishap-prone environment. Therefore, you can see how dangerous a ship’s environment can be. Any chain of events could lead to a major catastrophe. Because of that, personnel must follow both **PRACTICAL SAFETY** and prescribed **SAFETY REGULATIONS** to prevent personal injury and illness.

Every time a mishap occurs involving a violation of an afloat safety standard, you should once again bring the standard to the attention of all personnel. You can do that by using Plan of the Day (POD) notes or division training at quarters. Most sailors receive instruction on safety standards at recruit training and at advanced training schools. However, don’t forget the new crewmember reporting on board! Give him or her a copy of the afloat safety standards found in chapter C1 (for surface ships) and chapter D1 (for submarines) of OPNAVINST 5100.19B. Briefing the new crewmember on the intent and importance of the standards is important.

We will now examine general safety standards that apply to all shipboard operations and spaces. **The following 40 standards may save your life!**

1. Locate and remember all exits from working and living spaces that you frequent.
2. Know the storage location of life jackets in or near working and living spaces.
3. Make sure you secure or lash down all movable objects in your spaces.
4. Always wear clothing that snugly fits your body.
5. Carry a load in a reamer that allows one hand to be free when practical.
6. Always move up or down a ladder with one hand on the railing.
7. Know the emergency shutdown procedures for all equipment you use.
8. Make sure you do not block exits with equipment or boxes.
9. Ensure ventilation ducts are free of blockage.
10. Prohibit horseplay aboard ship.
11. Prevent personnel from wearing rings, watches, key rings, and other items that might become entangled or caught on projections.
12. Always wear approved safety shoes when the job requires it.
13. Carry as little in your pockets as possible.
14. Walk, don't run in passageways.
15. Be cautious when nearing a "blind" corner.
16. Know the location of all lifeboat and liferaft stations. Know how to proceed to them from your living and working spaces.
17. Identify the location of all fire stations and other fire-fighting equipment in or near your living or workspaces.
18. Keep constantly familiar with the whereabouts of crewmembers in the space where you are working. That is especially important if the work is in tanks, voids, or other restricted-movement areas.
19. Smoke only in designated areas.
20. Use equipment in an authorized manner, and make sure it is used only by authorized personnel.
21. Wear sunglasses topside only.
22. Close and dog watertight doors if so designated during normal operations.
23. Know the location of life rings, watermarkers, and flares.
24. Know the areas where you should wear protective equipment.
25. Inform senior personnel responsible for a given space or equipment if you discover unsafe conditions.
26. Do not lean against lifelines.
27. Keep decks free of obstacles and materials causing slippery conditions. Post slippery areas with a warning sign. Make sure you install nonskid around machinery work areas.
28. Provide temporary protection by guardrails or chains, suitably supported by stanchions or pads, when opening accesses in bulkheads or decks normally closed.
29. Never straddle or step over lines, wire, and chains under tension.
30. Wear a life jacket topside where the potential exists of falling, slipping, or being thrown or carried into the water.
31. Never lock escape scuttles so personnel cannot open them from the inside.
32. Never dismantle or remove any lifeline or hang or secure any weight or line to any lifeline except as authorized by the commanding officer.
33. Never dismantle or remove any inclined or vertical ladder without permission from the commanding officer. Secure such areas with temporary lifelines and post with a warning sign.
34. Never operate machinery or equipment with defective safety devices without permission of the commanding officer.
35. Never tamper with or render ineffective any safety device, interlock, ground strap, or similar device intended to protect operators or equipment without the approval of the commanding officer.



89-Iowa (47), 90-Saratoga (21) deaths

Figure 7-2.—Afloat mishaps from 1983 through 1992.

36. Never open or close electrical switches and pipe valves unless authorized to do so.
37. Make sure you pad low overheads above inclined ladders (72 inches) and passageways (75 inches).
38. Color-code hazardous areas around machinery and elevators to warn people of danger areas.
39. Rig heavy weather lifelines before expected inclement weather.
40. Attach a safety line to workers when working in a tank or void.

AFLOAT MISHAP REPORTING

In late 1989, in response to a rash of shipboard mishaps, the Chief of Naval Operations (CNO) called a Navywide safety standdown (fig. 7-2). After the standdown, CNO tasked Commander, Naval Safety Center (COMNAVSAFECEN) with providing

recommendations to improve our safety programs among ships and submarines. These recommendations were as follows:

- Establish better afloat mishap investigation and reporting procedures.
- Add primary duty safety officers to group and squadron staffs and large ships (crew greater than 500).
- Upgrade safety training.

Safety officials found that although the aviation community was thorough in its investigation of serious mishaps, ships were ineffective in reporting mishaps. Without detailed investigations, we were unable to provide lessons learned in a timely manner. CNO directed COMNAVSAFECEN to create an afloat safety program patterned after the Aviation Safety Program in OPNAVINST 3750.6Q.

OPNAVINST 5100.21B provides detailed procedures and report formats for afloat mishap investigation and reporting.

Although safety professionals were assigned to type commander staffs, no primary duty safety officers served within the chain of command between the safety professionals and the ships. Beginning in 1991, primary duty safety officers were assigned to readiness squadrons and group staffs. Primary duty safety officer billets were also added to fast combat support ships (AOEs). Other large ships already had primary duty safety officers. Ships with a crew of less than 500 personnel were to assign a collateral duty safety officer. All of these assignments provided continuity and assistance throughout the chain of command for safety issues.

During the period following 1991, safety training needed to be upgraded. New directives and emphasis on safety required a safety officer to have more in-depth knowledge and capabilities. Therefore, the CNO tasked NAVSAFECEN to develop a 10-day afloat safety officer course, now presented by Surface Warfare Officer School in Newport, Rhode Island.

In 1992, NAVSAFECEN developed a 4-day submarine safety officer course, now presented by the submarine training facility in Norfolk, Virginia, and the Naval Submarine Training Center in Pearl Harbor, Hawaii. The course for safety petty officers offered at fleet training centers was upgraded from 4 to 5 days and expanded to include additional safety skills. Afloat safety training was also added to many surface warfare officer courses, enlisted “A” and “C” schools, and recruit training.

When afloat mishaps occur, accurate mishap investigation and reporting serves to prevent mishap recurrence. We derive our general safety mishap investigation and reporting procedures from DOD Instruction 6055.7, *Mishap Investigation, Reporting, and Recordkeeping*. We discussed mishap investigation procedures in chapter 4. Investigative procedures are similar no matter where the mishap occurs. What mishaps are reportable and the procedures used to report mishaps are different for afloat, ashore, and aviation mishaps. OPNAVINST 5100.21B, *Afloat Mishap Investigation and Reporting*, provides **specific** reporting procedures for those mishaps occurring aboard surface ships and submarines.

DODINST 6055.7 provides for the various mishap categories and types of reports. The “class” of mishap is determined by the cost of damage and extent of injury

or fatality. The reports are classified as either a **General Use Mishap Report** or **Limited Use Mishap Report**.

We define an afloat mishap as any mishap caused by DOD operations resulting in injury, work-related illness, or death to embarked DOD military or civilian personnel. An afloat mishap also includes material loss or damage occurring on board all afloat U.S. Navy units and their embarked craft. Shipboard mishap investigation and reporting procedures apply to mishaps occurring on board all U.S. Navy vessels and their embarked or leased craft.

AFLOAT REPORTABLE MISHAPS

The categories of reportable afloat mishaps are as follows:

- **Class A Mishap.** Reportable damage of a total cost of \$1,000,000 or more or any injury or work-related illness resulting in death or permanent total disability. All Class A mishaps require investigation by a mishap investigation board and the submission of a Mishap Investigation Report (MIR). OPNAVINST 5100.21B provides the MIR format.

- **Class B Mishap.** Reportable property damage of a total cost of \$200,000 or more, but less than \$1,000,000; an injury or work-related illness resulting in permanent, partial disability; or a mishap resulting in the hospitalization of five or more people. A Class B mishap requires the submission of a Mishap Report (MR) to the Naval Safety Center. OPNAVINST 5100.21B provides the MR format.

- **Class C Mishap.** Reportable property damage of a total cost \$10,000 or more, but less than \$200,000; or an injury preventing an individual from performing regularly scheduled duty or work beyond the day or shift on which the mishap occurred; or a nonfatal illness or disability causing loss of time from work or disability at any time (lost time case). A Class C is only reportable in an MR under the following conditions:

- The total cost of reportable property damage is \$10,000 or more, but less than \$200,000.
- It results in an injury preventing an individual from performing regularly scheduled duty or work 5 days beyond the day or shift on which the mishap occurred.

- **Special Case Mishaps.** For data collection and analysis purposes, the following special case mishaps are reportable to the NAVSAFECEN in an MR:

- All cases of electric shock.
- All cases of toxic, hazardous chemical, or hazardous material exposure requiring medical attention.
- All cases of oxygen deficiency requiring medical attention.
- All cases of back injury requiring medical attention.
- All mishaps involving explosives, oxidizers, incendiaries, explosive systems, or chemical warfare agents. They include mishaps resulting from the detonation, accidental launch, malfunction, dangerous defect, or improper handling of a weapon; damage to a launching device; a weapon impact off-range; or any other unusual or unexpected weapons-related occurrence. They are reported using the information and format provided in OPNAVINST 5100.21B. An explosive mishap that meets the criteria for an afloat Class A mishap requires a formal mishap investigation and the submission of an MIR.

OFF-SHIP REPORTABLE MISHAPS

Mishaps that occur off ship (on or off duty) are normally reported using OPNAVINST 5100.21B. However, mishap investigation boards are not required for off-ship fatalities. Off-ship mishaps include home, athletics, recreation, motor vehicle, and diving mishaps. They are reportable as follows, based on OPNAVINST 5100.21B:

- Report off-duty mishaps resulting in a fatality, 5 or more lost workday injuries, or greater than \$10,000 government property damage to the NAVSAFECEN using a Recreation, Athletics, and Home Safety (RAHS) Report. Enclosure (10) of OPNAVINST 5100.21B gives the format for this report.
- Bicycle, pedestrian, motorcycle, and motor vehicle mishaps involving a fatality, 5 or more lost workday injuries, or greater than \$2,000 government property damage are reportable to the NAVSAFECEN. Enclosure (8) of OPNAVINST 5100.21B contains the format for this report.
- Off-duty diving mishaps are reportable if they involve a fatality, 5 or more lost workdays because of injury, or the need for hyperbaric treatment. Submit a

diving mishap report for recreational diving mishaps that do not require hyperbaric treatment. Enclosure (7) of OPNAVINST 5100.21B gives the format for the diving mishap report.

Other than Class A mishaps, reportable and special-case mishaps are the responsibility of shipboard personnel to investigate. The safety officer conducts an informal mishap investigation, as discussed in chapter 4. The safety officer has 30 days from the time of the mishap to submit the appropriate report. Shipboard mishaps involving other civilian or foreign personnel are not reportable under OPNAVINST 5100.21B. You may request guidance from COMNAVSAFECEN on mishap investigation and reporting requirements.

PRIVILEGED INFORMATION

Since a thorough safety mishap investigation cannot be conducted if the witnesses are afraid or reluctant to provide information, they are assured that the board will keep their testimony in confidence. Since the MIR is a limited-use report that is not releasable under the Freedom of Information Act (FOIA), we can protect witness testimony and other mishap board deliberations from being used for other than safety purposes. We call this protected information “privileged” information. We discussed privileged information in more detail in chapter 4.

MISHAP INVESTIGATION BOARDS

Superiors in the chain of command appoint a formal mishap investigation board to investigate all afloat Class A mishaps on surface ships. The board consists of at least three members. The immediate superior in command (ISIC) of the ship or craft involved in the mishap appoints the senior member of the board. These board are appointed in writing and will include a medical member if the mishap involved a fatality or injury.

COMNAVSAFECEN sends a mishap investigation advisor to help each board. This advisor is not a member of the board, but assists the board in conducting the investigation. The board may also request technical assistance, such as technical representatives and forensic experts. Technical assistants are not members of the board.

The mishap investigation boards submit findings and recommendations in an MIR. An MIR is a **limited**-use report written by a mishap investigation

board as a result of a Class A mishap. MIRs contain privileged information.

The chain of command receives and endorses the MIR. All MIR endorsements are also privileged, The NAVSAFECEN endorses all MIRs.

The chain of command then takes corrective action to prevent recurrence of the mishap. These actions may include sending out a message with lessons learned, changing procedures or designs, or alerting all units with similar systems to review their equipment. Lessons learned can be generated by the TYCOM or the NAVSAFECEN.

SUMMARY

In this chapter, we introduced you to the Afloat Safety Program. We discussed its goals and its scope, as well as the responsibilities of the personnel involved in the program. We examined the program's organization. We reviewed the training, both ashore and afloat, available to shipboard personnel. We briefly discussed shipboard mishap reporting procedures. Finally, we examined basic submarine and surface-ship safety precautions.

For detailed information on the Afloat Safety Program, you should consult the references listed at the end of this training manual.

